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## CLIMATE AND HEALTH, WITH SPECIAL REFERENCE TO THE UNITED STATES<sup>1</sup>

By Professor ROBERT DeC. WARD

HARVARD UNIVERSITY

### PRESENT VIEWS REGARDING THE RELATIONS OF CLIMATE AND HEALTH

**T**HE modern view as to the part played by climate in relation to health is very different from that held in earlier days. The cause of most diseases was formerly sought directly in atmospheric conditions. These conditions, to state the present view very broadly, are now believed to be important in two ways. They may affect, more or less directly, the life, development and virulence of the micro-organisms which are the specific cause of disease, and they may strengthen or weaken the individual's power of resistance against the attacks of these organisms. The older views concerning the predominant and direct influence of climate have largely been replaced by the conviction that good hygiene is more important than climate alone, and that, in the matter of the influence of a change of climate as a preventive or restorative, a change of residence, habits, occupations, food, is usually of as much importance as, if not of more importance than, the actual change in atmospheric conditions. If pure air, good food, freedom from worry, time for rest, proper exercise, outdoor life and a congenial occupation are provided, many bodily and mental ailments yield to the treatment. Climate is by no means to be discarded as of no account. It affects our physical and mental condition and our bodily comfort. It may be dull, rainy and cheerless, or bright, sunny and exhilarating. It may tend to keep us indoors, or it may naturally tempt us to go out. Thus some climates are naturally avoided; others are sought out. The choice of a suitable climate must depend upon the disease to be dealt with and upon the individual concerned.

### WHAT IS A GOOD CLIMATE?

What, then, is a "good climate?" This question can here be answered only in the most general way. The answer, in individual cases, must obviously depend upon a person's physical and mental condition; upon his own personal preferences, and upon the factors other than climate which should be taken into account in each special

<sup>1</sup>Part of a Presidential Address before the American Meteorological Society, Chicago, Ill., December 29, 1920. The writer is indebted to Dr. Guy Hinsdale, of Hot Springs, Va., for valued criticisms.

case. A "good climate" is naturally one which is favorable to the development of a sturdy race of men and women, physically strong and mentally alert. There is a pretty general agreement, among physicians, physiologists and climatologists, that, excepting those who are distinctly ill, the best climate for most people and most of the time is one which has frequent moderate weather changes; fairly marked annual and diurnal variations in temperature; a reasonable amount of cold during at least part of the year; a refreshing variety in the amount of cloudiness, and sufficient rainfall to provide enough moisture for the growth of grass and crops. Such a climate is an intermediate one. It is neither invariably hot nor permanently cold. It is neither monotonously arid and cloudless, nor always dull and rainy. It is between all extremes. The climates of much of the so-called "temperate zones" are of this general type. Their physiological effects are intermediate between those of the equatorial and those of the polar zones. They exercise the body's power of reaction and adaptation, keeping it physiologically active, and in good "working condition," without subjecting the different organs to too severe a strain.<sup>2</sup>

A climate which encourages people to spend the maximum possible amount of their time outdoors, in the open air, is, other things being equal, the best for the majority of men and women. Applying these general principles to the question of health, it may be stated that a health resort where a patient can find comfortable quarters, congenial company, plenty of diversion, and where favorable climatic conditions such as those above noted, with abundant sunshine, an absence of disagreeable winds and dust and of sudden marked weather changes, encourage outdoor life, is to be recommended. The climate does not necessarily and inevitably cure, but it is very often an important help in the treatment of disease. To quote Sir H. Weber, "for any given class of cases, that climate is a good one in which the qualities that would be disadvantageous are to a certain degree absent during the whole year, or at least part of the year, while the other qualities are present by the proper use of which the bodily strength is raised and the restoration of the affected organs and functions is facilitated."

#### IS THERE ANY "PERFECT" CLIMATE?

In the foregoing quotation from one of the leading medical climatologists, emphasis is laid on one point concerning which there is a general and persistent misconception. "That climate is a good one," Sir H. Weber wrote, "in which the qualities that would be disadvantageous are to a certain degree absent during the whole year, or at least part of the year." In other words, a good climate has the fewest

<sup>2</sup>F. P. Weber and G. Hinsdale, "A System of Physiologic Therapeutics," Philadelphia, 1901, Vol. III, p. 18.

"outs," or is free from its "outs" during a portion of the year. It is often said that the climate of a certain place is "perfect" or "ideal." As a matter of fact, there is no such thing as a "perfect" climate, anywhere, or all the time. Every climate has some disagreeable features. Health resorts are never equally desirable at all seasons. It is probably safe to say that every climate has advantages of its own for some special purpose, but some climates have more, and some have fewer, disadvantages. A southern climate which has a mild and genial "winter," and therefore provides abundant opportunities for an outdoor life at that season, is likely to be too hot, or rainy, or dusty, in summer. A northern climate, which has the advantages of cool summers, is likely to be very cold and stormy and snowy in winter. A western seacoast in subtropical latitudes, with the attractions of equable temperatures, mild winters and cool summers, relatively small rainfall and few stormy days, may be too damp and too foggy for many invalids. Mountain resorts, often so useful in the treatment of lung diseases, may have the disadvantages of being too cool at night; too windy and dusty by day, or of having frequent severe local storms. "Perfect" climates, then, do not exist. In climatotherapy, which may be broadly defined as the use of climate for checking or preventing the development of disease, and for aiding the recovery of those who are ill or convalescent, the obvious course is to select a locality where the other necessary conditions, such as suitable accommodations, good food, expert medical attendance, and so on, are already provided, and where the climate has a maximum of the desired characteristics for the particular case concerned, and the minimum of undesirable features. The seeker after health whose physician orders a "change of climate" should go away expecting some conditions which are neither "perfect," nor perhaps even altogether agreeable. If a "perfect" climate is not anticipated, the inevitable lack of perfection will bring with it no disappointment. It should be remembered that any climate which is recommended by a competent physician doubtless has far more good qualities than bad ones. The utmost advantage can always be taken of the good; most of the temporary disagreeable ones can be escaped by staying indoors, and by maintaining a cheerful disposition which refuses to be overcome by an occurrence of so little importance as an occasional spell of bad weather.

#### NO CLIMATE IS "THE ONLY CLIMATE" FOR ANY INDIVIDUAL CASE OF ILL HEALTH

In connection with this misconception regarding the existence of "perfect" climates, there is a widespread and persistent popular impression that certain climates have such special and peculiar properties of their own that there is some one particular climate which is the only one fitted for a special case of illness. If an invalid hits upon

this climate, he believes that he will, beyond a doubt, regain his health.

In my own experience of a score of years I have had abundant and often very distressing opportunity to learn how widespread is this notion, and how nerve-racking, in many people's minds, the choice of this one climate becomes. I have received many letters, personal visits and even telephone calls, asking me to name that special place whose climate is the one needed in the individual case concerning which the inquiry is made. It is hardly necessary for me to say that under no circumstances do I attempt—nor should any climatologist attempt—to prescribe any climate for any specific disease. That is the responsibility of the physician. The most pathetic case which has ever come to my own attention was that described in a letter which I received a few years ago. The letter was from a physician in New York State, who had a son seriously ill with a complication of disorders. Leading specialists in New York had been consulted, but the youth was steadily growing worse, and there seemed little hope of saving his life. Evidently in despair, and as a last resort, the father, who was unknown to me even by name, wrote to me, giving me full details as to his son's illness and the previous treatment of the disease, and asked me to name the place to which the son could be taken in order to give him the benefit of whatever climate, in my judgment, would be the suitable one for that particular case. That letter revealed the whole story of the father's love for his boy; the tragedy of his despair of saving the boy's life; the grasping at a "last straw" in his writing to me as one of whom he had somehow or other heard and who might possibly give the advice which would save the son's life. What could I write in reply to that father's pathetic and despairing appeal? All I could do was to write a letter as full of human sympathy as it was possible to make it; to urge consultation with some physician who had made a specialty of climatotherapy; to point out the importance of selecting some place where every possible comfort and care could be found, and then to mention the general advantages of the winter climates of a considerable number of Southern resorts where relief from the winter cold and from the sudden and severe weather changes of New York State might be found. I need not say that I named no place as possessing the one climate which would be of most help in the curative process. The end of this story I do not know. No second letter ever came to me from that father.

This incident serves as a striking illustration of exactly what I am here trying to emphasize. Climate, as a recent writer has well put it, may "play an important part in the curative process, but the climate of certain localities does not possess any peculiar properties which act as a specific on certain diseases." Or, as another has put it, "the choice of a climate is not a nerve-racking decision the entire success of which depends upon hitting upon the one ideal climate in the whole

world, but simply the selecting of one out of six or seven localities, any one of which will do all that climate can do to restore health" (Dr. Woods Hutchinson).

#### LOCAL VERSUS GENERAL CLIMATES

This belief that the climates of individual health resorts possess certain special local characteristics, of peculiar health-giving value, and differing essentially from the general climate of the surrounding country, is apparently largely based upon an exaggerated idea of the importance of local controls over climate. The subject of local as compared with general climates is a large one, and cannot here be adequately discussed. A few illustrations may, however, be given to indicate some typical cases.

As a whole, climates are more alike than unlike. In the Tropics, where cyclonic weather controls are characteristically absent (except in certain restricted areas and at certain special seasons), and where diurnal controls are dominant, a small district well enclosed by mountains probably comes as near to having a local climate as is possible on a land area. Here the general winds, which are the most effective agents in wiping out climatic boundaries, are excluded, and temperature, winds, cloudiness, humidity, rainfall and other elements are essentially influenced by local conditions. Over most of the "Temperate Zones," on the other hand, where cyclonic cloud and rain areas, and cyclonic winds, are the characteristic phenomena of the weather, and largely determine the character of the climates, local controls inevitably have far less influence. Examples of various degrees of local modifications of climate may be classified under three general heads: (1) extended, open, level plains, lacking bodies of water and forest cover; (2) coasts; (3) mountains. To these may perhaps be added (4) the subordinate and very local influences of forests. In the first-named districts, where the prevailing winds have free sweep, and where there are no local topographic, water or forest controls, local climates, in any real sense, cannot exist. In the second case (2), that of coasts, places on and near the seashore often have the advantage of a cooling sea-breeze on hot summer days. The effect of the water is noticed on a much larger scale, and to a far greater distance inland, when the prevailing winds, or the temporary cyclonic winds, happen to blow on-shore. The proximity of the ocean, or of large inland bodies of water like the Great Lakes, may have considerable effects not only upon temperature, but also upon cloudiness, humidity, rain and snow-fall. Marine fogs are another local characteristic of some seacoasts. (3) Topography is one of the chief controls in modifying general climates. Elevated stations have certain distinguishing characteristics which, when well developed, give rise to the term "mountain climate." Altitude, as is well known, affects temperature. Mountain stations as

a rule have lower temperatures than adjacent valleys and lowlands. On the other hand, on clear, quiet nights, especially in winter, "inversions of temperature" frequently give slopes and summits distinctly milder spells than those found at lower levels. Mountains and even low hills modify the direction of the winds. A range of mountains, or a single mountain, may protect places to leeward against strong winds. Cool, descending nocturnal breezes, following hot summer days, often provide comfortably refreshing nights where houses are favorably situated opposite the mouths of valleys. Proper choice of building sites, above the level of valley and lowland fogs, ensures drier air and more sunshine than are found lower down in the fog zone. Mountains offer opportunities for the development of diurnal cumulus clouds on fine summer days, and local showers and thunderstorms occur with greater frequency in mountainous country than over the surrounding lowlands. (4) Forests, although very subordinate controls of local climate, check wind velocity, serving as a protection against disagreeably strong, hot or cold winds; provide fresh, clean, pure air, very free of dust and of injurious micro-organisms; slightly lower the mean temperature and slightly increase the relative humidity. The air in pine forests has long been believed to have certain desirable soothing and healing properties, of benefit in affections of the nose, throat and lungs. It is upon such local characteristics as those here mentioned, and others like them, that many local weather prognostics and proverbs are based. Familiarity with such weather signs often gives local "weather-wise" people some advantage over an "official" forecaster at a great distance, who has only the general conditions shown on the weather map to guide him.

In these, and in other ways, general climates may locally be more or less modified. But the larger controls of the general climate persist. What are popularly believed to be special peculiar qualities of the local climates of well-known health resorts are usually in no way essentially different from the climates of hundreds or thousands of square miles of the surrounding country. The factors which are of most consequence in giving such resorts their reputation are not, therefore, the special and peculiar qualities of their *local* climates, although these may play a part, but the combination of many conditions which render these places safe, desirable and agreeable residences for invalids and for pleasure-seekers.

#### FACTORS OTHER THAN CLIMATE WHICH DETERMINE THE POPULARITY OF HEALTH RESORTS

When, centuries ago, Hippocrates wrote "in chronic diseases it is advisable to go to another country" he doubtless had in mind the benefits to be derived not only from a change in climate but also from a change in the general environment, social, mental and physical. For

it cannot be too strongly emphasized that climate is but one element in the treatment, albeit often a, or even the, most important element. In fact, so large a part do the other factors play that it is difficult, even impossible, to determine how much of the benefit of a health resort is derived from the climate, and how much from other conditions. Given a suitable climate for the particular illness in question, among the other important contributing factors are accessibility; comfortable and cheerful accommodations; an altered diet of good food; expert medical attendance and proper hygiene; a congenial social environment; outdoor attractions of beautiful scenery, opportunity for varied forms of exercise and diversion such as walks, drives, sea-bathing, outdoor sports, and the like. Rest; recreation; freedom from worry; mental and social change and relaxation, usually play an important part in the benefit derived from what is generally called merely a "change of climate," and as a rule accomplish better and quicker results than a more prolonged treatment at home. The use of suitable mineral waters, taken internally or used for bathing purposes, is another non-climatic element which, in the case of some resorts, is of predominant importance in the treatment.

The enumeration of these various non-climatic elements should by no means lead to the conclusion that climate is of no value, that there is no such thing as climatotherapy; that climatologists have no concern in this matter. Climate, it is true, is but one element in the treatment, but it is an element of great, and in most cases of paramount, importance. As has already been pointed out, atmospheric conditions are critical in that they affect the micro-organisms which are the specific causes of disease; they strengthen or weaken the individual's power of resistance; they encourage or they discourage rest and recreation out of doors, and outdoors is the best treatment of all.

The established health resorts of the United States, and of other countries, have gained their reputation because they combine, more or less completely, the complex series of factors just enumerated. They have what has well been termed "the momentum of an early start." Advertising has had, and always will have, a great deal to do with the popularity of all such resorts. So far as climate alone is concerned, there are enormous vacant tracts in this country—in the Appalachians, in the Rocky Mountains and plateaus; on the Pacific slope—where health resorts without number could be developed with just as favorable climatic conditions as those which prevail at the resorts which are already established. But the latter now have the accommodations and the other advantages which are needed to make them popular, and therefore they have the "early start."

In what has thus far been said, the term health resorts has been exclusively used because the subject under discussion concerns itself primarily with the climatic treatment of disease. It is however, per-



factly obvious that most of the so-called health resorts are also pleasure resorts, frequented by persons who are in no way ill, however much they may sometimes seek to give themselves, and others, the impression that they are so, but who are attracted by the many natural and artificial advantages which these so-called health resorts offer. There are, in reality, few places which are frequented solely by invalids. Those which belong in this group are sanatoria where special attention is paid to the treatment of certain special diseases, and where no one is admitted who is not in need of such treatment. Many places which began as health resorts have now become pleasure resorts, pure and simple. Others are rapidly going through the same change. It is, therefore, impracticable, in the present discussion at any rate, to draw any distinction between resorts which are devoted solely to health purposes, and those which are used partly or solely for pleasure.

#### THE HEALTH RESORTS OF THE UNITED STATES: GENERAL

Having now considered, in broad outline, the larger relations of climatotherapy, attention may next be directed more specifically to the health and pleasure resorts of the United States. This phase of the question is also treated in a very broad way. No attempt is here made to give a catalogue of the health resorts of the United States, or to include any numerical or statistical data. All such data can readily be secured from the regular publications of the United States Weather Bureau. All that is here intended is to give a systematic presentation of the larger climatic characteristics, in the form of broad generalization, in such a way that the essential facts may be properly coördinated. Furthermore, it does not fall within the scope of the present discussion to consider in detail the physiological reactions of the human body to varying meteorological conditions, nor to mention any but the most common and most familiarly known diseases.

In what follows, the places which are specifically mentioned by name are considered as types of the health and pleasure resorts which are already established in the same general regions, and may be taken also as representative of many others which may, in the future, be established in the same districts, and with similar advantages in so far as these concern the climate and the general physical environment.

#### THE CLIMATIC PROVINCES OF THE UNITED STATES IN RELATION TO HEALTH

For purposes of systematic coördination it is necessary to group the health resorts of the United States in certain large and easily remembered climatic provinces. These are: (1) the Eastern Province, extending from the eastern base of the Rock Mountains to the Atlantic Ocean on the east and the Gulf of Mexico on the south; (2) the Rocky Mountain and Plateau Province, and (3) the Pacific Province.

## THE EASTERN PROVINCE. GENERAL RELATIONS TO HEALTH

From the point of view of health, the most important climatic features of the Eastern Province are the great seasonal ranges of temperature, the severe cold of the winters over northern sections being followed by hot summers, and the suddenness, frequency and amount of the weather changes, especially in winter. Several short periods of extreme cold are to be looked for every winter, and the summers always bring spells of extreme heat. In such a region, where sudden severe and irregular weather changes are so characteristic, climatic averages can give little idea of the actual conditions which are experienced from day to day. Seasons often differ markedly in character from year to year. Weather changes are erratic and unexpected. It has become a popular saying that almost any kind of weather may be expected at any time of the year. The Appalachians are of too moderate an elevation to produce typical mountain climates, and the effect of the ocean is reduced to a minimum because the prevailing winds are off-shore. Lorin Blodget was not far wrong when he wrote: "We scarcely regard the Alleghenies as disturbers of any condition of climate except in the moderate degree produced by altitude alone."<sup>3</sup>

With decreasing latitude, the southern tier of States has distinctly milder winters, with less and less snowfall, somewhat warmer summers, and generally steadier and more "settled" weather.

The severe weather changes of the northern winters are usually borne without serious discomfort or harm if the body is in good health, and accustomed to adjusting itself quickly. Cold in itself, if not too severe and not too long continued, is beneficial to most people who were born and who have lived in the higher latitudes, for it necessitates increased bodily heat production and metabolism, and leads to a beneficial activity of many tissues and organs. On the other hand, these same sudden physiological readjustments may be too severe a strain on the aged and those who, because of illness or general physical disability, cannot react readily. Such meteorological conditions may then bring on various functional disturbances, and are especially harmful in the case of elderly people.

In damp air, evaporation from the internal surfaces of the body is decreased. When the air is at the same time cold, the lungs and respiratory passages not only lose a large number of heat units in the effort to heat the inspired air up to the body temperature, but also lose much moisture by evaporation, warm air having a greater capacity for water vapor than cold air. These physical processes, and the frequency of the sudden readjustments necessitated by the variable weather changes, are often followed by certain well recognized conditions of ill health. Diseases of the organs of respiration are prevalent in the

<sup>3</sup>Lorin Blodget: "Climatology of the United States," 1857.

winter months over the northern and northeastern sections, where the winter cold is often damp, and where temperature and humidity changes are most marked. Such diseases are "colds," influenza, bronchitis, catarrh, whooping cough, diphtheria, congestion of the lungs, pneumonia, and so on. The outdoor conditions tend to lower the vitality of the body which is not in good physical condition, and, when unusually severe or long continued, may react unfavorably on those who are otherwise in good health. Furthermore, the indoor life which so generally results from the prevalence of cold and of stormy weather, and the consequent lack of fresh air, naturally lead to a general lowering of the vitality, and to a diminished power of resistance against the attacks of disease germs. The greatest prevalence of most of the throat and lung diseases towards the end of the winter and in early spring depends upon the fact that the injurious effects of an indoor life, insufficient exercise in the open air, and inadequate ventilation, are at a maximum after several weeks or months of that highly artificial "hot-house" sort of life. Diseases of the nervous and circulatory systems, and rheumatism are also common in this type of winter climate. In summer hot spells, when both temperature and relative humidity are high, diarrhoeal disorders become frequent; sunstroke and heat prostrations occur. Hay fever is also a summer condition which affects large numbers of people who, on this account, seek places from which the irritating cause is absent.

THE HEALTH AND PLEASURE RESORTS OF THE EASTERN PROVINCE:  
GENERAL CLASSIFICATION

The simplest rough-and-ready grouping of the health and pleasure resorts of the eastern United States depends upon the fact that the northern winters are cold and stormy, and that the summer temperatures are high, especially in the south. It is thus to be expected that great numbers of invalids, and of others who are in a position to travel, should seek relief from the inclemency of the winter months by going south, and should go north, to cooler latitudes, during the hottest season. There is, therefore, a general group of I. *Southern winter resorts*, further roughly subdivisible into (a) mountain, (b) coast, and (c) intermediate. Likewise, there is a general group of II. *Northern summer resorts*, also subdivisible into (a) mountain, (b) coast, and (c) intermediate. No classification of this sort can be a hard and fast one. Many of the southern resorts which are frequented by Northerners who are trying to escape the cold in winter are used by Southerners who find these same places desirable resorts during the summer. Further, physicians are sending certain classes of cases to northern resorts, like the Adirondacks, in winter, and it is becoming more and more the habit of some of the younger and more robust members of the population of the northeastern cities to enjoy winter

outings in the mountains of New England, and in the Adirondacks, where the deep snows give opportunity for winter sports, such as snowshoeing, skiing and tobogganing. Again, a good many readily accessible places in intermediate latitudes, such, e. g., as Atlantic City, N. J., are well filled at all seasons.

#### SOUTHERN WINTER RESORTS

Southern winter resorts have long been recommended by physicians who realize the advantage of a winter sojourn for many invalids and convalescents in climates where the conditions are less rigorous than those farther north, and are therefore also better suited to an open-air life. The best-known Southern health resorts are in Virginia, the Carolinas, Georgia and Florida. In mid and late winter and early spring a great exodus of health-seekers, bound south, sets in. Luxurious trains, equipped with every luxury and comfort, with through Pullman cars to all the Southern resorts, are then crowded to their utmost capacity. The development of this elaborate system of transportation, and of the great numbers of modern and highly luxurious southern hotels, is a natural response to the steepness of the winter poleward temperature gradient on the Atlantic coast.

The invalids who constitute a large element in this annual southern migration are sufferers from tuberculosis, asthma, bronchitis and other affections of the nose, throat, and lungs; from rheumatism; nervous and kidney troubles; insomnia; overwork. Convalescents from acute illnesses of many kinds make up a further considerable percentage of the total. But increasing numbers of those who "go South" in winter are really nothing but pleasure-seekers, afraid of the cold. They belong to the wealthy and semi-leisure classes, and are in search of a soft and comfortable life, with plenty of diversion and such outdoor occupations as golf, sea bathing and horseback riding. It is, perhaps, fortunate for the future race that so insignificant a part of the population as a whole can afford to bask in the warm sunshine of luxurious southern winter resorts.

Asheville, North Carolina, is probably the best known of the southern winter resorts of the mountain group (I, a). Far enough south to escape the extreme severity of the winter cold and storms, yet far enough north to have a moderately stimulating and invigorating climate, with many dry and sunny days; situated in the midst of a beautiful mountainous country, with excellent hotel accommodations and abundant opportunity for outdoor life and diversion, Asheville has become a resort for those afflicted with pulmonary and similar ailments; and for a large group of cases such as nervous disorders, for example, which are benefited by an intermediate climate. It is used by Northerners in winter and by Southerners in summer, the two chief seasons being February and March, and July and August.

The mountainous portions of Virginia, the Carolinas and Georgia offer essentially similar climatic advantages over enormous areas, and are certain to witness the development of many health and pleasure resorts in addition to those already established. A special class of stations in this same general region is that which has become known on account of its mineral springs, e. g., Hot Springs, Va., and White Sulphur Springs, W. Va. These places are chiefly resorted to because of the benefits to be derived from the use of the waters and from the expert medical practitioners whose services are there available, but they also have the advantages of a mild winter climate and excellent accommodations.

The southern coast resorts (I, b) may be considered to extend as far north as Virginia, and to include Florida and the Gulf coast on the south. The New Jersey coast is intermediate between the northern (II, b) and the southern (I, b) coasts, but here again no sharp line of demarkation by latitude can be drawn. Old Point Comfort, Newport News and Norfolk, Va., have long been winter and spring resorts for Northerners and have been used as summer resorts by people from the South. They combine the advantages of a mid-way location, accessibility, good hotels, and a climate moderated by ocean influences both in winter and in summer. The journey from the great northern cities to the far South being often somewhat trying to those in delicate health, these Virginia coast stations have proved convenient temporary stopping places, and also provide a gradual climatic transition between north and south.

Farther down the Atlantic seaboard, the advantages of the southern coast as a place for a winter sojourn naturally increase. Far to the south, at the extreme end of the Atlantic coast temperature-ladder, lies Florida, a deservedly famous winter playground and health resort whose popularity has grown very rapidly. The peninsula of Florida, lying between the warm waters of the Atlantic and the Gulf, enjoys an almost tropical climate, naturally attractive to those who come from the ice and snow of the northern states. The Florida "winters" are extraordinarily mild and equable, interrupted now and then by moderate cold spells which, on relatively infrequent occasions, are sufficiently severe to bring frost. Invalids should be prepared for these occasional cold spells, as well as for spells of enervating, even uncomfortable warmth, for there are many distinctly "hot" and relaxing days, especially in the late winter and spring. Abundant sunshine; a dry, sandy soil; relatively few rainy days; the absence of snow; a soft, balmy air; the beauties of the semi-tropical vegetation; every inducement to an outdoor life which natural conditions and the thought and ingenuity of man can devise; excellent train service; luxurious hotels and sea-bathing even in mid-winter—these are sufficient to ensure the popularity of Florida as a winter resort. Before the heat of later

spring begins, a wholesale exodus of invalids and of pleasure-seekers takes place. The northbound trains are then crowded, hotels are closed, and Florida settles down to the quiet of its long summer.

This mild, relatively damp climate is soothing and relaxing. It is prophylactic, preventive. While not the best for certain cases and stages of tuberculosis, and not unlikely to aggravate certain anemic conditions, Florida winters have many excellent qualities for convalescents; for elderly persons; for those broken down nervously; for many patients with nose and throat troubles, and in certain diseases of the digestive organs. Too long a sojourn in such a climate may, however, lead to a marked toning-down of the system, to loss of appetite, and to digestive and nervous difficulties. Palm Beach, with its seashore life, is known the country over through persistent newspaper notoriety. Tampa, Miami, Jacksonville, St. Augustine, are familiar names.

The Gulf coast, from northwestern Florida to Texas, by reason of its mild winters and its summers tempered by the prevailing onshore winds, offers numerous resorts which, while not as generally frequented by Northerners as those of the Atlantic seaboard, are popular among Southerners, both in summer and in winter. New Orleans, about midway on the Gulf coast, attracts Northern visitors who are diverted by the life of this quaint and picturesque city.

Between the Appalachian Mountains on the west and the Atlantic seaboard on the east, and towards the southern portion of the Atlantic Slope, there is an intermediate group of stations (I, c) of considerable importance. These are mostly situated at a very moderate elevation above sea-level, in a belt of dry, sandy, porous soil covered with extensive pine forests; far enough south to have dry, mild and relatively sunny winters, without the sudden weather changes of the north, yet with a more bracing climate than that of Florida. Aiken and Camden, S. C., Pinehurst and Southern Pines, N. C., Thomasville and Augusta, Ga., and other places, with excellent hotels, good golf links, and abundant attractions for an outdoor life, are much resorted to by Northern invalids and pleasure-seekers. The pure soothing "balsamic" air of the pine forests is doubtless a health asset whose exact value has yet to be determined. Pinehurst and Southern Pines are attractive names, with good "advertising value."

#### NORTHERN SUMMER RESORTS

One of the great summer vacation grounds of the United States is in New England and in the Adirondack area of New York. From the hot and crowded cities, vast throngs of people surge northward every summer, by train, steamboat and automobile, to the mountains, the seashore and the country, to seek relief from the summer's heat; to find rest and relaxation in beautiful scenery, changed surroundings and

pure air. This annual exodus is chiefly made up of the well-to-do classes, and consists proverbially mostly of women and children. The men are usually obliged to limit their vacations to "week-ends," or to short outings of a few weeks. The large majority of those who frequent these northeastern summer resorts are not invalids, in any true sense, but do want and need rest, an outdoor life and changed surroundings.

The mountain districts of the northeast—the White Mountains of New Hampshire, the Green Mountains of Vermont, the Berkshire Hills of Massachusetts, the Catskills and Adirondacks of New York (II, a)—have long been favorite summer pleasure resorts. The summer population is here many times greater than that of winter. Hotels, boarding houses, cottages, camps, are filled. These mountain regions have many attractions for the summer visitor. They abound in picturesque scenery. They offer innumerable varied excursions. Mountain climbing, camping, fishing, tennis, golf, appeal to thousands of people.

The specific climatic advantages of the mountains are found in their clean pure air, in their latitude, and in their elevation. There is relief from the more intense heat of the crowded cities farther south, the nights in the mountains being as a rule cool and refreshing. But during the general hot waves which prevail over large sections of the eastern United States at one time, and import heat from a distance in their southerly winds, the mountains are by no means exempt from high temperatures. Local topography often plays a considerable part in the special climatic peculiarities of any given mountain resort. A place may be freely exposed to the prevailing summer winds, or it may be shut off from them by a mountain barrier, or by forests. There are hot valleys, even in the White Mountains of New Hampshire. A favorable location with reference to cool mountain winds may make the difference between a hot and oppressive night and one which provides refreshing sleep. Such local differences are quite worth consideration in building a summer cottage.

From the point of view of health, many of these mountain districts are famous for their immunity from hay fever, and for the benefit which the open-air life gives in many cases of pulmonary and bronchial disorders, in general debility, and in cases of overwork and nervous exhaustion. The early autumn, with its exhilarating days, its crisp, cool, often frosty nights, and the wonderful coloring of its autumn foliage, is the most stimulating and in many ways the most attractive season, but it is a time when most of the summer visitors have already departed to their city homes.

It is unnecessary to enumerate the many well-known resorts of the White Mountains. Good advertising, luxurious accommodations, a

'catchy' name—these and other factors may at any time bring into prominence a new hotel, erected in what was before an abandoned forest.

The Catskills, close to New York City, are now almost overcrowded during the hotter months. "The gentle loveliness of a hill country" has made parts of the Berkshire Hills in Massachusetts a veritable garden of beautiful estates. The Green Mountains of Vermont, less rugged than their neighbors, the White Mountains of New Hampshire, are dotted over with peaceful villages, and attract a numerous summer population.

Of these northeastern mountain groups, the Adirondacks are the most widely known as a health resort, and this chiefly because of the remarkable success which has been accomplished in the altitude and open-air treatment of tuberculosis at the "Trudeau Sanatorium," founded by the late Dr. E. L. Trudeau, at Saranac Lake Village. It is the perfection of medical care and proper hygiene, and the open-air life, rather than any peculiar climatic quality, which has given the Trudeau Sanatorium its richly-deserved reputation. The Adirondack "wilderness" offers many attractions to summer vacationists, with its dense forests; its many sparkling lakes and ponds; its mountain peaks; its varied inducements to a healthy, active, outdoor life. The pure, dust-free air; the tempered summer heat; the comforts and luxuries of the hotels, the accessibility, combine to give the very name of the Adirondacks a suggestion of enjoyment and peace, and above all, of health. Lake Placid, Saranac Inn, Paul Smith's, are familiar names. The Adirondacks, like all other places, have their climatic drawbacks. Occasional hot spells; frequent summer afternoon showers and thunderstorms, and nocturnal fogs over and in the immediate vicinity of the lakes and in the valleys, are among these. Saranac Lake Village is an all-the-year health resort and, as has already been noted, there is an increasing use of the Adirondacks by those in search of winter outdoor sports. The winters are rough and hard; spells of extreme cold are frequent in the valleys; there are many storms, much cloudiness and abundant snowfall. But there are also many bright, crisp, exhilarating winter days.

The coast, as well as, and often to a greater degree than the mountains, gives relief from the summer's heat (II, b). The whole New England seaboard, from Mt. Desert on the north to the shores of Connecticut on the south, is a succession of summer resorts and of summer cottages. Long Island and then New Jersey extend this line still farther south. With its cool ocean waters; its picturesque and rugged shore-line; its numerous bays and rocky islands and good beaches, the New England coast attracts vacationists from many parts of the United States. The Maine coast has exceptionally cool summers,



especially to the north. South of Maine follows the short strip of the New Hampshire coast, and then the "North Shore" of Massachusetts, with picturesque Cape Ann, Gloucester, Manchester and Beverly. A majority of the native population in this whole section gains the chief part of its livelihood from the summer visitors. The general trend of the coast line is such that the prevailing summer winds (S. W.) in many places are tempered by passing over the cool ocean water before they blow onto the land. The sea-breeze brings in pure, cool, refreshing ocean air during the noon hours of many summer days. Hence the coast often escapes the extreme heat of the interior and of more southern seashore resorts which have not the benefit of such cold offshore water as flows along the northern New England coast. The stimulating and bracing qualities of this cool summer climate have been recommended by the medical profession to many convalescents from chronic illnesses, and to patients suffering from general and nervous debility, anemia and in some cases of insomnia. But the frequency of chilling fogs and of damp easterly winds is disadvantageous in most throat and lung troubles, and the climate is too stimulating for many delicate persons who lack the vitality to react properly. These cases do better in a less bracing climate. For them, the "South Shore" of Massachusetts, and the seashore resorts reaching from southern Massachusetts to New Jersey, are generally more favorable. The Massachusetts "South Shore," with the Cape Cod and Buzzards Bay resorts, and its warm ocean waters, is warmer, more equable and more relaxing than the Maine coast. It is, therefore, better in most cases of insomnia, mental and nervous exhaustion, overwork, and convalescence. Its fogs and dampness are, however, a drawback. Martha's Vineyard and Nantucket, both of them islands to the south of Cape Cod, have even more equable conditions and smaller diurnal temperature ranges than those of the mainland. All their winds blow off the warm ocean water. Rhode Island has its Newport and its Narragansett Pier. Connecticut and Long Island offer many additional seashore residences. New Jersey may be taken as the southern limit of the "Northern Summer Seashore Resorts." The coast of New Jersey is practically one long line of health and pleasure resorts. The best known, and most consistently and widely advertised of these is Atlantic City, with a long and growing list of luxurious hotels; its famous "Board Walk," and its typically American seashore amusements. These attractions, combined with easy accessibility from New York, Boston, Philadelphia, and other large cities, and the excellent bathing facilities, ensure the popularity of Atlantic City. In summer hot spells, the sea breeze gives welcome relief. And even the offshore winds blow over a narrow stretch of salt water which separates the sand bars on which the city is built from the mainland. Atlantic City

has also become a much-frequented winter resort, especially by invalids and by vacation-seekers from the neighboring cities. There is a general impression that its winter climate is quite different from that of the rest of this part of the country. This is a mistake. The New Jersey coast is still within the storm-control of the northeastern United States. It has winter rains and snow, and cold waves, and much cloudiness, and frequent temperature changes. Its easterly winds are damp and chilly. On the other hand, however, the very rapid poleward temperature-gradient along the Atlantic coast in winter ( $2.7^{\circ}$  Fahr. in January per latitude degree) inevitably gives New Jersey the advantage of mean winter temperatures somewhat higher than those farther north. Owing to the latitude and the location immediately on the ocean, the snowfall is less than inland, or in higher latitudes. The sandy soil dries quickly and warms rapidly, so that the snow which falls does not remain long on the ground. Bright, fine winter days show a considerable degree of diurnal warming.

It should be remembered that a large part of the reputation of Atlantic City, and of many other places, rests upon artificial conditions. In the case of Atlantic City itself, most of the "Board Walk" is sheltered from the northwest winds. On cold or stormy days people stay indoors; shut themselves up in glass-enclosed sun-parlors; venture out on the Board Walk in covered wheel-chairs, or sit and walk in sheltered places. Being away from home, and having no duties which call them outdoors, no matter how inclement the weather, they are naturally more or less unconscious of what the weather is. Advantage is taken of being out and of enjoying the warm sunshine and tonic air on all fine days, and, as so often happens, the "change" which benefits is more the rest, freedom from worry, and new and, to most people, diverting surroundings, than any marked difference in climate. As a winter and early spring health resort, the New Jersey coast is recommended for those who are suffering from overwork, insomnia, throat troubles; for "convalescents from acute diseases"; for many elderly people and those whose vitality is lowered—for all of whom comfortable accommodations, good food, pleasant surroundings, and somewhat less strenuous physiological adjustments to severe weather changes are desirable. Lakewood, N. J., while not on the immediate coast, may also receive mention here. Situated on the dry sandy soil of the pine belt of New Jersey, with somewhat warmer and more genial winters than prevail farther north, with clean, dust-free air and with protection against the coldest winds, Lakewood was formerly a health resort, but has now become largely a winter pleasure resort.

The third group of northern summer resorts is in the interior, neither in the mountains nor on the seashore and may be classed as intermediate (II, c). Here come the Maine woods and Rangely and

other Lakes in Maine and the Lake Champlain and Lake George districts. Beautiful and varied scenery; extended forests, relatively cool stimulating summers; the opportunity for camping and fishing and for living a simple outdoor life, have here brought to many thousands of mentally and physically tired city folk rest and relief and fitness for their winter's work. For sufferers from hay-fever, and for many persons for whom the northern sea coast is too damp and too stimulating, these intermediate stations have proved highly beneficial.

#### THE GREAT PLAINS

The Great Plains constitute a natural and logical province from the viewpoint of climate alone, but on account of their broad expanse of remarkably uniform topography, the similarity and the disadvantages of some of their general climatic characteristics, and the lack of local scenic attractions, they have not developed any climatic health resorts in the strict sense of the term.

#### THE WESTERN MOUNTAIN AND PLATEAU REGION

The great mountain and plateau region of the West, extending from the eastern foothills of the Rocky Mountains to the Cascade—Sierra Nevada divide, has altitudes sufficiently great to give true "mountain climates", with their special features of strong sunshine, dry air, and strong diurnal ranges of temperature. Combined, as they are in the western United States, with a small annual rainfall, comparatively few general storms, and little cloud and fog, such climates have distinct advantages for many invalids. Furthermore, with a great variety of topography and of altitude—lofty mountains, elevated plateaus, deep valleys, low-lying deserts—this great western region embraces a wide variety of local climates. Colorado has become famous the world over for the success which has there resulted from the altitude treatment of pulmonary tuberculosis. As Dr. C. Theodore Williams expressed it, "the favorable results (of the climate) . . . may be seen in the large number of former consumptives whom it has rescued from the life of invalidism and converted into healthy and active workers."<sup>4</sup> The development of the muscles of the organs of respiration; the resulting expansion of chest and lungs; the improved circulation; increased heat production; better appetite, a general stimulation of various organic functions—these are among the effects of the altitude cure which are helpful in raising the vitality and in giving the body the power to overcome the ravages of the tubercle bacilli. There are, however, a good many classes of tubercular cases for whom considerable altitudes are too stimulating, or even distinctly injurious, and who do better nearer sea level, where the climate is less stimulat-

<sup>4</sup>C. T. Williams: "The High Altitudes of Colorado and Their Climates," *Quart. Journ., Roy. Met. Soc.*, Vol. 19, 1893, pp. 65-82.

ing, and where there is less danger of overworking the heart and blood vessels. Such cases are those of elderly patients, those with diminished vital powers and those suffering from insomnia, cardiac and bronchial affections. The winters of Colorado are marked by an abundance of fine, crisp, sunny days and little snowfall except on the higher mountain slopes, where it accumulates to great depths. Lower down snow falls much less frequently, melts rapidly and offers no serious obstacle to an open-air life. The summers have warm days and cool nights, with frequent local showers and thunderstorms in the mountains. In the foothills region the high dusty winds of the warmer months are a distinct drawback. As compared with the northern tier of states, especially in the eastern part of the country, there are in Colorado few general storms, even in winter. The winter's cold and the heat of the summer days are much more easily borne in the dry mountain air than is the case with the same temperatures in the more humid east. The large diurnal ranges of temperature usually ensure refreshingly cool summer nights and relatively warm winter days. Invalids can as a rule be out of doors for several hours a day, even in midwinter, and need only light wraps in the strong sunshine. The western mountains are so far from the great eastern centers of population that they have not in the past attracted such great numbers of summer vacationists as frequent the mountains and seacoast of the northeastern sections. But those who are in search of an outdoor life in a rugged country of great scenic beauty are going to Colorado in larger numbers each year, and the regular "tourist travel" to the Yellowstone and Glacier National Parks, and to other favored districts of great natural wonder and beauty is increasing annually.

What has been called by the late Dr. S. E. Solly the "Invalid Belt" of Colorado varies in altitude from 4500 to 8000 ft., and extends from Middle and Estes Parks to Colorado Springs. The latter is perhaps the best known of all the Colorado health resorts, especially for those predisposed to or afflicted with tuberculosis of the lungs. A considerable part of the population of Denver has settled there for reasons of health. Manitou Springs is another health resort. The climate of the region which these cities represent is also favorable to other classes of cases which need an open-air life and not too great a stimulation of various bodily functions. At these, and other places in the "Invalid Belt," special attention is paid to the care of consumptives. Expert medical practitioners, who are skilled in the treatment of tuberculosis, are available. Excellent accommodations are provided. Everything has been done to aid the cure, for the accomplishment of which the high, dry, sunny climate of Colorado has proved to be so peculiarly well adapted.

The so-called "Parks" lie west of the Colorado Front Range. They are sheltered intermont basins or valleys, of 6000—8000 ft., altitude, with scattering pine-tree growth, of a park-like character which gives them their name. Some of these parks are well frequented summer resorts, but there is, as yet, insufficient provision for invalids.

South and southwest of Colorado come the mountains and plateaus and valleys of New Mexico and Arizona, and then, along the southern border of the United States, are the low lying deserts and irrigated valleys of the driest portion of the country. It is highly significant that well south of Colorado, in the highlands of New Mexico, at Fort Bayard and at Fort Stanton, the United States Government has established its consumptive sanatoria for the Army and Navy.<sup>5</sup> Of this general region Dr. W. A. Hammond, formerly Surgeon-General of the Army, wrote: "New Mexico is by far the most favorable residence in the United States for those predisposed to or afflicted with pthisis," and Dr. W. M. Yandell, of El Paso, has said that if a mild climate during the cold season is desired, New Mexico and Arizona, south of latitude 35°, furnish by far the best winter climate in the United States for consumptives<sup>6</sup>. Northern New Mexico and Arizona have very much the same climatic advantages as does Colorado for the altitude treatment of tuberculosis, but are even less subject to cyclonic weather changes by reason of their somewhat lower latitude. Their winters are also milder for the same reason, but occasional spells of extreme cold and snowstorms are to be expected at the higher levels. The early mornings and evenings are usually frosty; the noon hours are warm and bright. The tonic, invigorating quality of the dry sterile air; the enjoyment and encouragement which comes from an abundance of bright sunshine; the very small winter precipitation, with a minimum of rainy and cloudy days; the possibility of open-air treatment throughout the cold season; the wonderful and varied coloring of the mountains; the glories, the bigness and the appeal of the desert—these are among the attractions of the Great Southwest. The summers are long and hot, and too debilitating for many invalids. The mountains then have an advantage over the lowlands, owing to their more comfortable nights, due to the marked diurnal variation in temperature and, often, to the occurrence of cool, mountain breezes. On the desert lowlands of the south, the summer heat is more intense, and lasts longer. The dryness of the air however helps to make these very high temperatures endurable, and sunstrokes are traditionally unknown. A distinct drawback to a

<sup>5</sup>Since June 15, 1920, the hospital at Fort Bayard has been in charge of the U. S. Public Health Service, and is now known as "Hospital No. 55, Fort Bayard." The hospital at Fort Stanton is "U. S. Marine Hospital No. 9." There is also a U. S. Naval Hospital at Fort Lyon, Colo.

<sup>6</sup>Quoted by Solly, *loc. cit.*, p. 276.

summer sojourn in most parts of the semi-arid Southwest, especially on the low-lying plains, is the frequency of high, dusty winds. In many places this dust is alkaline, and is very irritating to the mucous membranes. As health resorts, such localities are obviously undesirable, if not altogether impossible.

While fully recognizing the many remarkable cures which have been accomplished in the cases of thousands of tuberculous patients when such persons were sent out in time; were properly advised as to the best place of residence, and were financially able to make the best possible use of their opportunities, it is undeniable that many serious mistakes have been made by the medical profession in advising their invalids to go to the Southwest. Such mistakes arose largely from an inadequate knowledge of the actual climatic conditions. Patients have been sent out to the wrong places, and at the wrong seasons. Invalids, far advanced in the later stages of tuberculosis, have been advised to take the long journey when they were in no condition to stand the fatigue and could not afford the expense. Many have gone to the higher stations ill-prepared for the cold of winter, or to the southern towns during the intense heat of the summer. It is manifestly unfair to attribute the deaths of many unfortunate invalids to climate, when such persons came too late, and had improper care and surroundings. It is as true to-day as it was when Lorin Blodget stated it that "large numbers seek milder climates and perish there, whose cases should be set down to the country from which they came."<sup>7</sup> A difficulty in the present-day use of New Mexico and Arizona for health purposes lies in the fact that there are as yet comparatively few places in which adequate provision is made for invalids. As a health resort, the Southwest is by no means fully developed. Santa Fé, Las Vegas, Albuquerque, in New Mexico (5000—7000 ft.), are fairly typical and are used as all-the-year health resorts for certain classes of lung cases. In Arizona, Phoenix, at a low altitude, Prescott and Flagstaff at greater elevations, are representative stations. El Paso, in extreme western Texas, has similar conditions to those of southeastern New Mexico at the corresponding altitudes. It also offers a favorable climate for invalids in winter but is too hot in the long summers.

#### THE PACIFIC COAST

For many centuries the Mediterranean climates of the Old World have been lauded in song and in story. For generations, the Riviera has been a favorite resort where invalids have sought health, and where an escape from the rigors of a cold and inclement winter has been found by those who have had the time and the means to leave their

<sup>7</sup>Loc. cit.

northern homes. The sub-tropical belt, which has its greatest extension in the classic Mediterranean region, combines many of the qualities which, taken together, probably make as nearly "ideal" a climate, for the majority of people, as can be found. Situated far enough from the equator to be spared continuously high and enervating temperatures, yet near enough to it to escape the extreme cold of higher latitudes, these transitional sub-tropical belts are highly favored. With prevailing fair skies and abundant sunshine during most of the year, equable temperatures and generally moderate winter rains, "Mediterranean climates," as they have come to be called, possess many advantages which fit them to be health resorts. The long list of European "resorts" stretching along the shores of the Mediterranean Sea, in Italy, France, Spain and Africa, bears abundant witness to this fact. In the United States, Southern California, with similar climatic controls and characteristics, ranks high in the estimation of the medical profession, and in the minds of countless thousands who, in good health, have there sought, and found, pleasure and relaxation.

The Pacific Slope, with its great latitudinal extension, its snow-capped mountains and its broad and fertile valleys, embraces a great variety of climates. It is, however, the southern coast of California which is the real health resort, and it is therefore to that district alone that this discussion relates. A conservative estimate would indicate that fully three-fourths of the Eastern visitors to Southern California find their attraction in its climate and in the outdoor life which that climate makes possible, in the midst of vineyards, and orange groves and gardens of roses. The luxurious hotels make every possible provision for visitors, and the social intercourse with people from all over the country is an added element in the attraction for many. The essential features of the climate from the standpoint of health are its mildness and equability, without enervating qualities; the relatively mild winters and cool summers; the short winter rainy season, without snowfall and with rare frosts; the absence of sudden and extreme weather changes. Even in the so-called "rainy season" of winter, the rains are light; they are not steady and continuous, usually lasting but two or three days at a time and separated by much longer spells of fine sunny weather. The mountain barrier of the great Sierra Nevada and Cascade Ranges keeps out the extremes of winter cold which are found over the interior districts to the east of the mountains. In the "dry season" of summer, mild and nearly continuously fine weather is the rule.

Southern California has an all-the-year round climate. It is frequented at all times. Winter and spring, however, are the favorite seasons. It is then that the attractions of outdoor life are most appealing, the vegetation is green and fresh, and the great throng of visitors from

the northern and eastern parts of the country, escaping from the severe winters of the interior and Atlantic Slope, take the long overland journey in order to be warmed by the California sunshine, to enjoy sea-bathing, and to revel in a tempered climate where there is no snow and ice, and where fruits and flowers and green leaves replace the bare trees and frozen ground of the East. Even the most enthusiastic native of the Pacific Slope must be satisfied with Blodget's reference to "the elastic atmosphere and bracing effect" which "constitute a striking difference from those of the Eastern States." There is no climate on the Coast "which is not the reverse of enervating. . . All residents concur in pronouncing it more favorable to physical and mental activity than any other they have known, from whatever quarter they come."<sup>8</sup>

The health district of Southern California lies south of latitude 35° S., and is separated from the interior by mountains which border the coast. It is a country of fertile valley and plain. San Diego, Coronado Beach, Santa Barbara, Los Angeles, Pasadena, are names as familiar as San Remo, Nice, Mentone and Monte Carlo. Most of the resorts are on or close to the coast, and at a low altitude. They have advantages, and some disadvantages, on that account. The special topographic surroundings of each station contribute something towards giving it certain local characteristics, but in the main, the climatic conditions are everywhere similar. On the immediate coast, the special features are the fog, the dampness, and the prevalence of cool onshore breezes. The fogs are chiefly nocturnal, and spring and summer phenomena. The diurnal onshore breeze, from the cool Pacific waters, is of great help in tempering the heat of summer, but brings a chill which is trying to many delicate persons, and demands the protection of warmer clothing than the majority of visitors, unfamiliar with the details of the local climates, at first think necessary. The high relative humidity, resulting from the proximity to the sea, the fog and the onshore winds, is a factor not usually expected. It is a prevalent idea, even in the minds of many experienced medical practitioners, that the small annual rainfall which, so far as actual precipitation is concerned, ensures a "dry" climate, is necessarily accompanied by a low relative humidity. The late Dr. S. E. Solly expressed the following opinion, which may be taken as authoritative: "This Pacific coast climate is damp and presents its claims to sufferers on the grounds of equable temperatures and sunshine. It lacks the dry air and tonic, stimulating qualities of the elevated inland plains, but offers less shock to the system from rapid changes." If an invalid "needs the element of absolute dryness with low altitude and sunshine, he will hardly find them together except along the low plains of Arizona and New Mexico; that is while the barren inland country of California is

<sup>8</sup>Loc. cit.



dry, it lacks the conveniences of civilization which cannot be obtained short of the towns of Phoenix, Tucson or El Paso." And again, "it should be thoroughly understood by the Eastern visitor in search of health that if he seeks more days of sunshine and opportunities for outdoor life, with an equable temperature and an average humidity a little greater than that of New York or Boston, he can find what he desires at Santa Barbara or San Diego."<sup>9</sup>

The damp, cool night air on the coast, not infrequently combined with fog, is thus a climatic feature which is not to be ignored in the treatment of invalids. Such persons can, of course, to a certain extent escape this condition by remaining indoors at night.

In climatotherapy, Southern California has in the past been much used for tubercular cases; for many cardiac affections; for insomnia, nervous disorders and for persons of somewhat lowered vitality. For many invalids, especially those with throat and lung troubles, the "back country," among the hills, offers more suitable conditions than the damper, chillier, and more trying seacoast. Redlands, and Riverside are representative of the interior district, somewhat back from the coast and at higher elevations than the stations directly on the ocean.

Although mention has been made of certain of the least desirable climatic features of Southern California, it cannot be too emphatically stated that this region has, on the whole, a remarkably favorable combination of climatic conditions. It even possesses certain advantages over the climates of the most famous Mediterranean resorts of Europe. "Here", as the late Charles Dudley Warner wrote, "is our Mediterranean. Here is our Italy."<sup>10</sup> And here, it may be added, countless millions in the years to come will seek, and will find, health and strength and a wonderful exhilaration in the joy of living.

<sup>9</sup>S. E. Solly: *Medical Climatology*, p. 312.

<sup>10</sup>C. D. Warner: "Our Italy."